

**Indian Maritime University**  
**(A Central University, Govt of India)**  
**End Semester Examinations– December 2022**  
**Programme Name: B Tech (ME)**  
**Semester: 7th**  
**Subject Code: UG11T3705**  
**Subject Name: Engine Room Management**

---

Date: 19/12/2022

Max Marks: 70

Duration: 03 Hrs

Pass Marks: 35

---

General Instructions

- (i) All Sections (A, B & C) are to be attempted.
- (ii) Options, if any, are specified in respective section.

**Section A**

Select the most appropriate option (answer) (10 x 1 Mark =10Marks)

Q/1: During the sea watch, Under What circumstance the handing over watch keeping engineer will not hand over the watch to the taking over watch keeping engineer?

- a) He came late for the watch
- b) Not fit for duty
- c) Not in proper PPE
- d) Has not taken round in the engine room

Q/2: At what interval a ship must be dry-docked in compliance with the requirement as per regulation.

- a) At an interval of two and a half years
- b) After 02 years from previous renewal docking and 2<sup>nd</sup> docking before the completion of 5<sup>th</sup> year
- c) After 03 years from previous renewal docking and 2<sup>nd</sup> docking before the completion of 5<sup>th</sup> year
- d) All of the above

Q/3 What is the minimum eligibility criteria for certification of Marine Engineer Officer Class II for an Ocean going ship?

- a) Shall hold a certificate of competency as MEO class VI
- b) Shall have not less than one year of approved sea-going service
- c) Meets the standard of competence as specified in section A-III/2 of the STCW Code
- d) All of the above

Q/4 The statement "sludge treatment aims at reducing sludge weight and volume"

- a) True
- b) False

Q/5 Mechanical seals are used

- a) To prevent vibration
- b) To reduce friction
- c) To prevent leakage
- d) None of the above

Q/6 The attendant may leave the confined space entrance unattended Only to rescue an entrant in a condition that is immediately Dangerous to life or health (IDLH)

- a) True
- b) False

Q/7 Under OPA 90, who is responsible for mobilizing oil spill removal Organization (OSRO), in the event of spill of oil or noxious liquid substances?

- (a) Master
- (b) USCG
- (c) Responsible party
- (d) Technical Superintendent

Q/8 Hydraulic cranes must be properly warmed-up before being Operated because –

- a) Warm-up allows the hydraulic system to become charged with oil
- b) Warm-up allows the relief valves to be properly tested
- c) Hydraulic strainers operate only during the warm-up period
- d) Hydraulic fluid must be at the proper viscosity

Q/9 Which of the following conditions can lead to reduced power developed in a two stroke diesel engine (Main Engine)

- a) High Scavenge air temperature
- b) Choked air suction filter of a turbocharger
- c) Blow past in one or more units

d) All of the above

Q/10 Pertaining to a 4-stroke diesel engine, what is the meaning of the term Tappet clearance?

- a) The clearance between the rocker arm and valve spindle
- b) The clearance between valve spindle disc and seat
- c) The clearance between the rocker arm and cam shaft pushrod
- d) None of the above

### **Section B**

Five Questions of 02 Marks each (5 x 2 = 10)

Q/11. Engine room receives information from Bridge that there is going to be an extreme weather/sea conditions. What precautions you will take to sail through safely? (restrict your answer to action taken in the machinery space only).

Q/12. What are the documents which an Ocean going ship must always carry in compliance with the International Blast Water Management convention 2004?

Q/13. Your ship is under manoeuvring. One of the units of your main engine is not firing. You cannot stop the engine, how you will manage to sail?

Q/14. During sea watch you observed that the engine room bilge level is high. How will you manage to lower the bilges in compliance with the requirements?

Q/15. Your ship has completed loading. One hour notice is given prior sailing from port. In list seven items which you will check on steering gear system to ensure safe operation. Write point wise.

### **Section C**

Seven Questions of 10 Marks each.

Answer any FIVE .

Q/16. Your ship has to discharge cargo in port which lies in the ECA region. Write stepwise how will you change the main engine fuel oil from high sulphur fuel oil (HSFO i.e. 0.5% sulphur) to low sulphur fuel oil (LSFO i.e. 0.1% sulphur) in compliance with the Regulatory requirements, keeping in mind that the main engine should consume LSFO (expensive fuel) as less as possible (change over only for the main engine) (10)

Q/17. Your bunker (fuel oil) for the voyage is arranged at Singapore. Write step wise the preparation you will make for safe bunkering:

- (a) Preparation before bunkering  
(b) Measures you will take after the supply barge stops pumping and declares that the bunkering operation is over. (6+4)
- Q/18. (a) What is the significance of blowing through of a marine diesel engine? How it is done?  
(b) What are the responsibilities of engine room watch-keepers with respect to handing over and taking over watches? (3+7)
- Q/19. (a) As regard main engine what is the importance of taking indicator cards on board ship? What do you mean by in-phase and out of phase diagram? Briefly describe how you will take indicator card safely using "Mechanical Indicator instrument" (Please do not draw and describe various types of Indicator Diagrams)  
(b) What is enclosed space? Enumerate the reasons how any compartment can become oxygen deficient (7+3)
- Q/20 (a) Describe briefly the Human Factor of an engine room resource management. How it can be made more effective?  
(b) Describe briefly how spare parts are requisitioned on an ocean going Vessel (6+4)
- Q/21 What is MARPOL 73/78? How many annexes is there in MARPOL 73/78 Convention? Name all the annexes and describe them briefly.  
(10)
- Q/22 What planning and preparation is done by ship-staff:  
(a) prior to dry-docking a vessel  
(b) what inspection and maintenance is carried out on a vessel in a dry-dock? (Restrict your answer to dry-dock maintenance only and not the general maintenance) (5 + 5)